

CLAIMS

What is claimed is:

1. A method of color correcting a scene, comprising:
 - 2 predicting at least one frequency for a variation in the illumination in
the scene;
 - 4 measuring light from the scene at a periodic rate, where the periodic
rate is different than any of the predicted frequencies, using an exposure
6 length that is different than any of the periods of the predicted frequencies;
detecting the presence of an artificial illuminant when the measured
8 light from the scene contains periodic changes;
correcting the color in the scene due to the artificial illuminant.
2. The method of claim 1 where the periodic changes are variations in brightness.
3. The method of claim 1 where the light from the scene is focused onto a photo
2 sensor and the periodic changes are variations in contrast.
4. The method of claim 1 where the periodic rate is close to, but not equal to,
2 twice a common AC frequency.
5. The method of claim 4 where the common AC frequency is 60 Hz.
6. The method of claim 4 where the common AC frequency is 50 Hz.

7. The method of claim 1 where the exposure length is much smaller than $\frac{1}{2}$ of
any of the periods of the predicted frequencies.

8. A method of selecting the illuminant type in a scene, comprising:

predicting a frequency for a variation in the illumination in the scene;
measuring light from the scene at a periodic rate using an exposure
time that is equal to the period of the predicted frequency;
detecting the presence of an artificial illuminant when the variability of
the measured light is high;
selecting an artificial illuminant type for the scene.

9. The method of claim 8, further comprising:

re-measuring light from the scene at a periodic rate using an exposure
time that is equal to the period of a second predicted frequency;
detecting the presence of an artificial illuminant when the variability of
the re-measured light is high; and
selecting an artificial illuminant type for the scene when an artificial
illuminant is detected;
selecting a natural illuminant type for the scene when no artificial
illuminant is detected.

10. A method of color correcting a scene, comprising:

predicting a frequency for a variation in the illumination in the scene;
measuring light from the scene at a periodic rate, where the periodic
rate is equal to an integer multiple of the predicted frequency, using an

exposure time that is different than the period of any of the predicted
frequencies;

detecting the presence of an artificial illuminant when the variability of
the measured light is high

correcting the color in the scene due to the artificial illuminant.

11. The method of claim 10, further comprising:

re-measuring light from the scene at a second periodic rate, where the
second periodic rate corresponds to a second predicted frequency;

detecting the presence of an artificial illuminant when the variability of
the re-measured light is high and correcting the color in the scene due to the
artificial illuminant; and

determining that the scene contains only small amounts of artificial
illumination when the variability of the re-measured light is low and
correcting the color in the scene based on a natural illuminant.

12. An apparatus for color correcting for the artificial illumination in a scene
comprising:

a photo sensor array, the photo sensor array configured to measure
light from the scene at a periodic frequency using a predetermined exposure
time;

a processor, the processor configured to determine the presence of an
artificial illuminant by examining the measured light from the scene for
periodic intensity variations, the processor also configured to color correct the
scene based on the presence of an artificial illuminant.

13. The apparatus of claim 12 where the periodic rate is close to, but not equal to,
twice a common AC frequency.

14. An apparatus for detecting the type of illuminant a scene comprising:

a photo sensor array, the photo sensor array configured to measure
light from the scene at a periodic frequency using a predetermined exposure
time;

a lens configured to focus the light from the scene onto the photo
sensor array;

a processor, the processor configured to determine the presence of an
artificial illuminant by examining the measured light from the scene for
periodic contrast variations, the processor also configured to color correct for
the illuminant type in the scene based on the presence of an artificial
illuminant.

15. The apparatus of claim 14 where the periodic rate is close to, but not equal to,
twice a common AC frequency.

16. An apparatus for color correcting a scene, comprising:

a means for measuring light from the scene at a periodic frequency
using a predetermined exposure time;

a means for determining the presence of an artificial illuminant by
examining the measured light from the scene for periodic intensity variations

6 a means for color correcting the scene based on the presence of
artificial illumination.

17. A digital camera comprising:

2 a photo sensor array, the photo sensor array configured to measure
light from a scene at a periodic frequency using a predetermined exposure
4 length;

a lens configured to focus the light from the scene onto the photo
6 sensor array;

a processor, the processor configured to determine the presence of an
8 artificial illuminant by examining the measured light from the scene for
periodic variations, the processor configured to color correct the scene based
10 on the presence of artificial illumination.

18. A method of color correcting a scene, comprising:

2 predicting at least one frequency for a variation in the illumination in
the scene;

4 measuring light from the scene at a periodic rate, where the periodic
rate is different than any of the predicted frequencies, using an exposure
6 length that is different than any of the periods of the predicted frequencies;

comparing the variability of the measured light to a first threshold;

8 correcting the color in the scene for natural illumination when the
variability of the measured light is below the first threshold;

10 correcting the color in the scene for artificial illumination when the
variability of the measured light is above the first threshold.

19. The method of claim 18, further comprising:

- 2 comparing the variability of the measured light to a second threshold
- where the second threshold is higher than the first threshold;
- 4 correcting the color in the scene for incandescent illumination when
- the variability of the measured light is below the second threshold and above
- 6 the first threshold;
- correcting the color in the scene for fluorescent illumination when the
- 8 variability of the measured light is above the second threshold.